Outcomes of the Journalists' Capacity-Building Intervention in the Prevention and Containment of Antimicrobial Resistance in Ethiopia, 2012 to 2014

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December 2014

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Key Words

antimicrobial use and resistance, Ethiopia, medicine use, journalists, media, broadcast

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CONTENTS

ACRONYMS AND ABBREVIATIONS

AIDS	Acquired immunodeficiency syndrome
AML	Antimalarial Medicines Use
ART	Antiretroviral treatment and adherence
ATB	Anti-TB medicines use
AMR	Antimicrobial resistance
CFC	Counterfeit medicines, contraband
COM	Labeling, counseling, prescribing, dispensing, communication
DACA	Drug Administration and Control Authority, now FMHACA
DME	Diabetes and medicines use
EBC	Ethiopian Broadcasting Corporation
EME	Other diseases and medicines Use
ERTA	Ethiopia Radio and Television Agency
EXS	Medicines expiry, storage
FMHACA	Food, Medicine, and Health Care Administration and Control Authority
FPC	Family planning/contraceptives
ETV	Ethiopia Television
HIV	human immunodeficiency virus
HME	Hypertension and medicines use
IES	Medicines interactions, medication error, safety
IPS	Infection prevention, personal/environmental hygiene
NFS	Nutrition, food supplements, traditional/complementary medicines
NPS	Drugs and Substances Abuse, Khat use, Alcohol,
PLC	Medicines and pregnancy, lactation, children
RMU	Rational medicine use
SIAPS	Systems for Improved Access to Pharmaceuticals and Services
SME	Self-medication, sharing, hoarding
USAID	US Agency for International Development
TB	Tuberculosis
VET	Veterinary use of medicines
WHO	World Health Organization

ACKNOWLEDGMENTS

This intervention work would have not been possible without the leadership and close collaboration of the Food, Medicine, and Health Care Administration and Control Authority (FMHACA) of Ethiopia. Not only did its staff support and show great interest in expanding this intervention to include other medicine-use topics, but also the FMHACA allocated funds to cover part of the journalists' capacity-building training expenses in 2014. The intervention and report were made possible through the financial support of USAID.

We would like to acknowledge the trained journalists who participated in this assessment for making antimicrobial-resistance prevention and containment a priority of their media outlets. They have provided the list of broadcast topics. The Government Communication Affairs Office; the Ethiopian Broadcasting Corporation (previously Ethiopia Radio and Television Agency); the Ethiopian Press Agency; the Regional Mass Media Agencies; and the radio, television, and newspaper outlets deserve acknowledgment for scrutinizing and broadcasting programs or printing articles on antimicrobial-resistance prevention and containment and for promoting the rational medicines use to educate and empower the people of Ethiopia to contribute to improved health outcomes so that they can be productive citizens.

EXECUTIVE SUMMARY

Introduction

Antimicrobial resistance (AMR) is a recognized global public health and economic threat. In Ethiopia, a baseline survey on antimicrobial use and AMR prevention and control was conducted in 2009. The baseline survey showed the gaps in prescribing, dispensing, and using of antimicrobials. As part of a coordinated national effort to prevent and contain AMR, the National Advisory Committee for Antimicrobial Resistance Prevention and Containment (AMR Advisory Committee) was established. The committee helped in the development of a national strategic framework and plan of action with corresponding targets, taking into account the findings of the baseline survey. Subsequently, multifaceted interventions have been launched in the prevention and containment of AMR and the promotion of rational medicine use (RMU).

Methods

One of the interventions targeted at the public and clients was the use of mass media to empower the public through by creating awareness, providing education, and advocating for AMR prevention and containment and the appropriate use of medicines. However, the expenditures for regularly broadcasting awareness creation and education messages through the multiple mass media outlets were difficult to cover and unsustainable. Therefore, the Food, Medicine, and Health Care Administration and Control Authority and USAID/SIAPS have developed an intervention strategy to build the capacity of journalists and to improve their understanding of AMR so that they can make AMR prevention and containment a priority for their reporting (i.e., television, radio, and print). This assessment is to examine the outcomes of the capacity-building intervention for journalists on the prevention and containment of AMR in Ethiopia for the period from 2012 to 2014.

Findings

The assessment findings have shown that from 2012 to 2014 the different mass media outlets broadcast a total of 218 topics on antimicrobial use, resistance prevention, and containment and on RMU. The highest number of media broadcasts were made in 2014 (41.1%), followed by 2012 (32.4%) and 2013 (26.5%). Of the journalists trained, 84.1% were male and 15.9% were female. Trained male journalists reported 75.2% of the AMR/RMU media broadcasts, whereas female journalists reported 24.8%. The most broadcasts were made on radio (83.5%), followed by newspapers (8.7%) and television (7.8%).

The messages were broadcast in 10 languages throughout the country. Among the broadcast topics were antimicrobials use and resistance prevention and containment (26.1%), RMU (17.9%), medicine use in tuberculosis (TB) cases (10.1%), antiretroviral medicine use and adherence (9.6%), medicine use in treating malaria (4.6%), and the remaining 31.7% on self-medication and sharing of medicines, individual and environmental hygiene and infection prevention, and counterfeit medicines.

Conclusions and Recommendations

The intervention is a bottom-up approach to educate and empower the public and clients on AMR prevention and containment and other areas of RMU. That strategy will help to prevent and contain AMR and to improve use of medicines by the public. It will also enhance appropriate health-seeking behavior and will positively modify patient behavior on what information to provide to and demand from health care providers during consultations. The same intervention strategy may also sensitize health care providers, health program managers, policy makers, and regulators to putting the necessary emphasis on the public health and economic threats of AMR.

In the future, the intervention must be intensified and strengthened, not only to expand the number and coverage of broadcasts but also to improve the quality and retention of the messages to be transmitted. Media education is known to improve knowledge; however, it is important to provide evidence that improved knowledge improves health outcomes.

INTRODUCTION

Irrational use of medicines has been a major public health problem, and antimicrobial resistance (AMR) is a global public health and economic threat.[1,2] AMR has been on the agenda of the annual World Health Assembly meetings.[3]

The Food, Medicine, and Health Care Administration and Control Authority (FMHACA) of Ethiopia with technical assistance from SIAPS and its predecessor program, Strengthening Pharmaceutical Systems, conducted an antimicrobials use and AMR prevention and control baseline survey in 2009.[4] The baseline survey showed the magnitude of AMR and the gaps in prescribing, dispensing, and use of antimicrobials. As part of a coordinated national effort to prevent and contain AMR, an AMR Advisory Committee led to the development of a national framework,[5] an action plan, and multifaceted interventions. These interventions have been launched for the prevention and containment of AMR and the promotion of RMU.

One means to implement interventions that target the public is the use of mass media, particularly, television, radio, and print media. The purpose of intervention is to empower the public to use medications appropriately by creating awareness, providing education, and advocating for AMR prevention and containment. However, the mass media are highly commercialized and charge a substantial amount of money for the airtime or space needed, making their use not only less accessible financially for the health programs but also unsustainable.

Therefore, the FMHACA and SIAPS developed an intervention strategy to build the capacity of journalists to improve their understanding of the topic of AMR, so that they can make AMR prevention and containment and the use of medicines a priority for their media outlets.

Journalists from radio, television, and newspapers received the capacity-building training. The intervention has helped them not only build capacity and further their understanding of the topic but also has led them to make it a priority, as seen by the number of broadcasts they have made on the topic at their respective media outlets. The training made journalists an effective instrument not only in broadcasting but also in accessing the media and sustaining AMR and RMU topics with no additional burden to the health program.

The intervention helps fill the gaps identified during the baseline survey and indicated in the AMR prevention and control national strategy and action plan. The assessment included the number and types of media broadcasts on AMR, RMU, and other topics over the years through different languages, broadcasters, and others. The intervention's approach increases public awareness and understanding. It also sensitizes health care providers, health program managers, and policy makers to containing AMR and promotes rational medicines use. The assessment was designed to discover the outcomes of the journalists' capacity-building intervention conducted between 2012 to 2014 in the use of mass media as a means to educate and empower the public on AMR and RMU.

BACKGROUND

Rational Medicine Use

Irrational use of medicines is a major problem worldwide. The World Health Organization (WHO) estimates that more than half of all medicines are prescribed, dispensed, or sold inappropriately and that half of all patients fail to take their medicines correctly.[6] The overuse, underuse, or misuse of medicines results in the waste of scarce resources and in widespread health hazards, including AMR. Public education about medicines is one of the 12 key interventions to promote more RMU.

AMR affects public health, the economy, and society. AMR can circulate among humans, animals, food, water, and the environment. Transmission is influenced by trade, travel, and migration, both human and animal. It is believed that the hard-won gains in global health are threatened because the organisms that cause many common human diseases have become resistant to the medicines used to kill them or inhibit their growth.

Treating infectious diseases that were previously regarded as relatively easy to treat such as malaria, HIV, and tuberculosis (TB) and other bacterial infections is much harder now. The emergence and spread of AMR in several microorganisms have made managing many infectious diseases difficult. Microorganism resistance is a natural process of adaptation that follows the use of antimicrobials. However, resistance develops far more quickly through the misuse and overuse of those medicines in humans and animals.[7] The development of resistance is a concern and an impediment to achieving the relevant Millennium Development Goals.

Promotion of RMU and the prevention and containment of AMR have a common approach and require integrated and well-coordinated efforts at any level of the health care delivery system that deals with medicines, including the national level. Such promotion involves biological, behavioral, economic, regulatory, and educational interventions and requires a comprehensive response that uses an evidence-based strategy.

Mass Media and Education on RMU and Prevention and Containment of AMR

The mass media are diversified technologies that aim at reaching a large audience through mass communication. The technologies through which that communication takes place vary. Broadcast media, such as radio, recorded music, film, and television, transmit their information electronically as opposed to print media—newspapers, books, pamphlets, or comics. Outdoor media comprise billboards, signs, or placards located inside and outside commercial buildings, sports stadiums, shops, and buses. Outdoor media also include flying billboards (signs towed by airplanes), blimps, skywriting, and augmented-reality advertising. Public speaking and organized events can also be considered forms of mass media. Digital media include both Internet and mobile mass communication.[8]

Media play a significant role in public awareness creation, advocacy, public education, and empowerment by promoting RMU and the prevention and containment of AMR. They even have the power to make health program managers and policy makers emphasize the problem. Public education on RMU provides knowledge and empowerment for informed decision

making to ensure the right use of quality medicines, the right sources of those medicines, and the right information to provide to and seek from health care providers. As presented by WHO,[9] media education on medicine use will empower the public to proactively seek the necessary information for improved health outcomes from health care providers. Media education can remind healthcare providers to give adequate information when prescribing and dispensing medicines—information that is accurate, legible, and easily understood by their patients. Such information should include the names of medications, their indications, frequency, duration of use, contraindications, dosages, drug interactions, and warnings concerning unsafe use or storage. All of this information is essential for treatment adherence and improved health outcomes.

Reviews[10,11] have shown the importance of mass media education in promoting RMU. The capacity-building intervention targeted the public and prescribers to curb the overabundant use of medications, over-prescription of medicines by physicians, and unethical promotion of drugs. The intervention resulted in improved knowledge and practices. Public health education efforts have used radio, television, newspapers, and other mass media because those outlets can reach a large number of people in a short time with a low cost per capita.

A number of European countries have succeeded in reducing antimicrobials use for coughs and colds through mass media education targeting consumers and prescribers.[12,13] Other European efforts using television, radio, and newspapers to reduce inappropriate use of antimicrobials were directed at parents of young children.[14] The media education highlighted the following facts that (1) higher consumption rates are linked to higher resistance levels, (2) antibiotics do not cure viral respiratory infections or even shorten the duration of illness, and (3) adherence to the treatment duration and dosage prescribed is important. Such intervention has reduced the unnecessary use of antibiotics. Another study[15] that used mass media to educate the public on RMU had some challenges. This same study recommended the inclusion of a media strategy in the national promotion of RMU and in the training of media staff members and journalists on RMU principles.

The use of mass media education to reduce health problems and to promote health in society gained momentum in the 1970s, with an initial focus on improving cardiovascular health. Mass media education later focused on other health areas, such as cancer prevention; HIV and AIDS prevention; family planning; and prevention of tobacco, alcohol, and illicit drug use. However, determining the impact of media education has not been easy.[16] The general public may depend on the media for information about any new phenomenon. Most radio programs in Ethiopia appear to be informative or entertaining. So FMHACA and USAID/SIAPS have used that potential to promote RMU and the prevention and containment of AMR.

Health education was found to improve adherence to regimens for the treatment of acute respiratory infections, malaria prophylaxis, and the use of ivermectin to treat and prevent onchocerciasis.[17] The same study explained that a well-planned education campaign can effectively communicate information to patients and the general public—for example, to reduce the use of injections and to improve adherence to regimens for antibiotics and other medicines.

Wakefield, Loken, and Hornik[18] studied the outcomes of mass media education in health-risk behaviors, such as the use of tobacco, alcohol, and other drugs; heart disease risk factors; sex-related behaviors; road safety; cancer screening and prevention; child survival; and organ or

blood donation. They concluded that mass media campaigns can produce positive changes or can prevent negative changes across large populations. The potential of mass media education is its ability to transmit simple, focused messages to large audiences. However, it could have negative effects if not properly structured or of low quality.[16,19]

Mass Media in Ethiopia

In Ethiopia, mass media broadcasters are either public or private. The public broadcasters with higher national coverage are Ethiopia Radio, Ethiopian Television, and FM Addis 97.1 (owned by the former Ethiopia Radio and Television Agency. Their broadcasts can be received across the country through a network of transmitters. Those stations provide multilingual news and programs across Ethiopia. In contrast, the public local radio and television stations are owned by the regional mass media agencies. Their reception range is generally up to a 150-kilometer radius but can be as little as 10 kilometers in some areas.

The five private radio broadcasters are located in Addis Ababa and Meklle, with varying transmission ranges.[20] There are also eight community radio broadcasters that have a radius ranging from 16 to 75 kilometers—their population coverage varies significantly. Reflecting the language diversity of Ethiopia, a range of languages is broadcast across the country. With regard to human resources, an estimated 1,200 journalists work in television and radio (20% in private) and 450 work in print media.[20]

Although mass media in Ethiopia include varied types of outlets, this report covers radio, television, and newspaper outlets. Mass media broadcasts disseminate information about the benefits of or threats relating to medicine use and the prevention and containment of AMR. Their purpose is to inform the public, health care providers, health program managers, and policy makers and regulators or to persuade the public to adopt behavioral changes. Some of those broadcasts were live interactive and persuasive programs and some were prerecorded. Information in the transmissions was presented in the form of interviews, cartoons, dramas, chats, and news, among others.

In Ethiopia, studies conducted in 2002[21,22] and the 2009 national baseline survey[4] reported a high level of self-medication; a low level of knowledge among consumers about medicines; and the misuse of antimicrobials by the public, health care providers, unskilled practitioners, and antimicrobials use in animal husbandry. These coupled with other factors, increased the rapid spread of resistant bacteria, and inadequate surveillance has exacerbated the problem.

The reports indicated that one of the targets for intervention was the clients and the public at large. Accordingly, FMHACA and USAID/SIAPS designed mutually complementary interventions, including capacity building of journalists to address the target for intervention. Specifically, the interventions worked to assist journalists in developing a plan of action for broadcasts on the topics of RMU and AMR in their respective media outlets, and to gain their agreement to follow-up meetings for further scale-up. Those goals will, in turn, increase the awareness, education, and empowerment of the public in relation to AMR and RMU and will also sensitize health care providers, health program managers, pharmaceutical policy makers, and regulators of food, medicines, and health care.

METHODS

Intervention

With the contribution of the AMR Advisory Committee, a national strategic framework was developed after the survey. One of the multifaceted interventions included in this framework was the effort to educate and empower the public and clients through the mass media. To implement this strategic direction, a capacity-building training program was conducted in 2012 and 2014 for journalists drawn from radio, television, and newspapers. FMHACA asked the mass media agencies to select one or more journalists who report on health to participate in the training program.

The capacity building program included (1) sharing experiences, (2) interactive presentations and discussions, (3) individual and group exercises, and (4) actual fieldwork, which was reported back to fellow participants and followed by discussions. Participants also received an agenda for broadcast and were asked to develop their own plan of action. They were urged to provide their supervisors and colleagues with the information gained during the capacity-building training on their return to their respective organizations. They were reminded to report the objectives of the capacity-building training as news in their media outlets. They were also provided a two-page article written in Amharic on AMR prevention and control to adapt and use. This capacity building was followed by a review meeting, which supported in the advocacy effort and the effort to educate the public. Some of the topics reported by the radio and print media were used as inputs in the review meetings with journalists.

Study Participants

The participants in this study were the journalists who received the capacity-building training on AMR/RMU and their media outlets.

Data Collection and Analysis

Data on the outcomes of the capacity-building intervention were collected through a semi-structured form to be filled in by the respondents or through telephone interviews with the trained journalists. The specific topics broadcast varied. To simplify the analyses, topics were organized into 20 categories and analyzed. The number of AMR and RMU mass media broadcasts collected was compiled and analyzed by year; gender of the reporter; type of media outlet (i.e., radio, television, or newspaper); specific topic; language used; and other factors.

FINDINGS

Antimicrobial Use Gaps

The baseline survey[4] and 2002 study[21] showed that clients and the public have been using antimicrobials without prescriptions (self-medication) for respiratory symptoms, abdominal symptoms, and diarrheal diseases. By and large, the sources of the drugs have been leftover antimicrobials found at home or provided by friends and relatives. Moreover, prescribers and dispensers also reported that the clients visiting the health facilities demanded prescriptions for certain types of antimicrobials. Those clients thought that antimicrobials should be used for ailments such as watery diarrhea and the common cold.

Generally, clients did not know the names, indications, and administration duration of the dispensed antimicrobials. The recommendations of both the 2002 study and the survey were to improve awareness, education, and empowerment of the public in general and clients in particular. Mass media education of the public and patients' education in health facility waiting areas form a strong synergy to improve adherence counseling and antimicrobials labeling by health care providers.[4,22]

Journalists' Capacity-Building Training and Number of Yearly Broadcasts

The capacity-building training on RMU and AMR conducted in 2012 and 2014 involved 151 journalists (figure 1), who provided 218 media broadcasts on RMU and AMR. Topics included antiretroviral treatment, adherence to treatment, and medicines used in treating TB and malaria. The number of broadcasts was highest in 2014 (41.1%), followed by 2012 (32.4%) and 2013 (26.5%), although no capacity-building training was conducted in 2013.

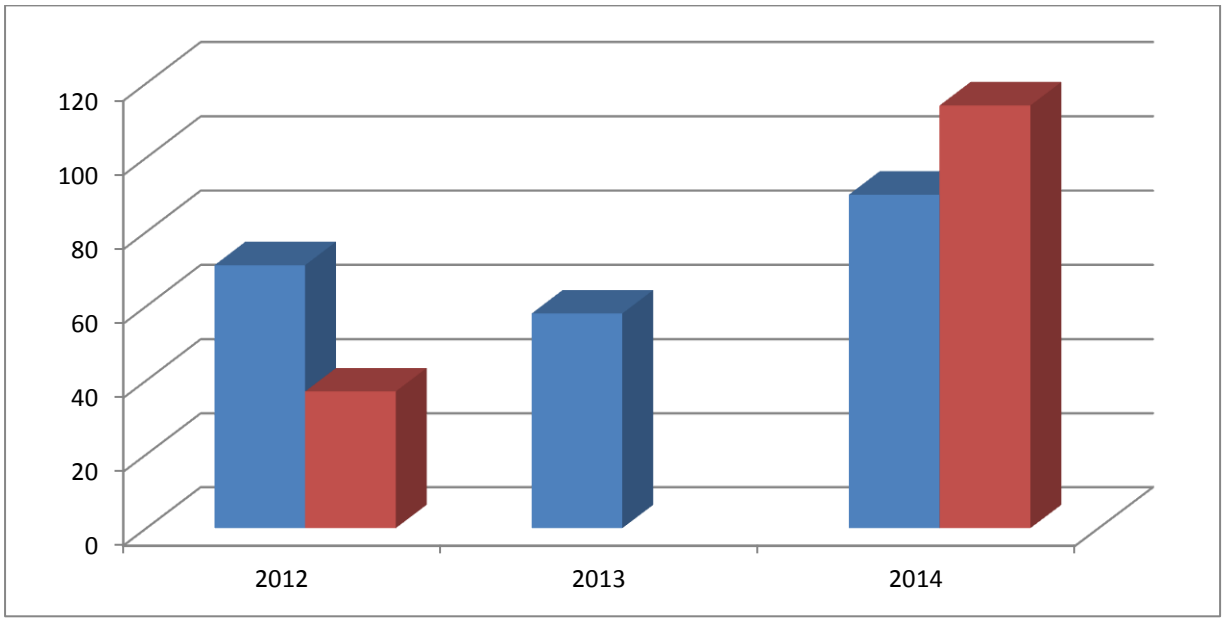

Figure 1. Number of AMR and RMU media broadcasts (blue) and trained journalists (red)

Of the journalists trained, 84.1% were males and 15.9% were females. The males reported 75.2% of the AMR and RMU broadcasts, whereas the females reported 24.8% (figure 2).

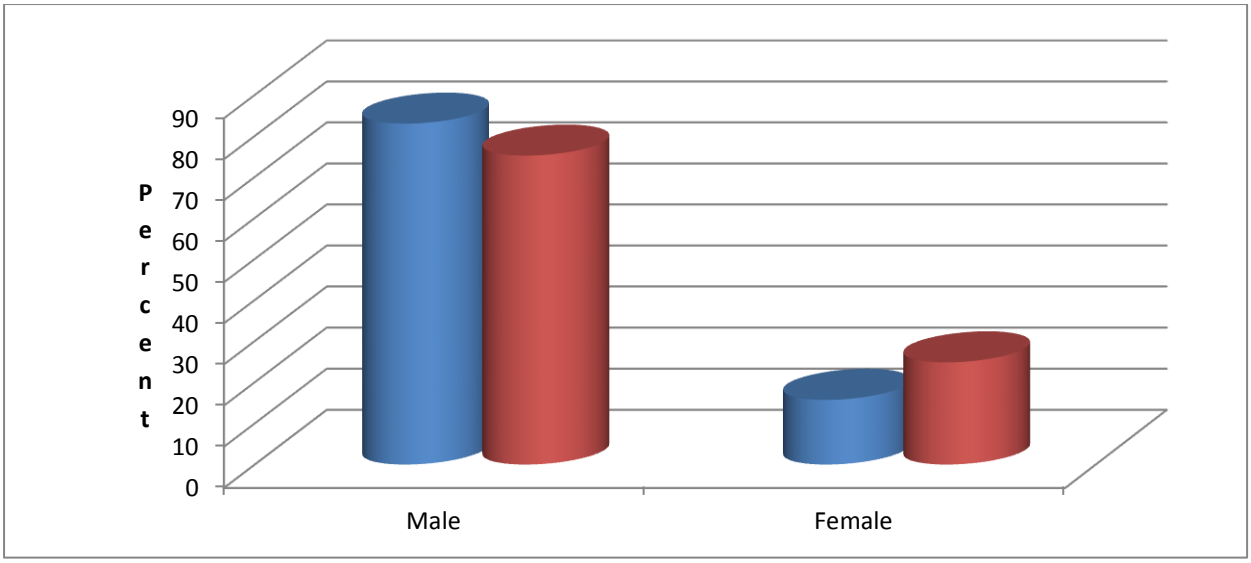

Figure 2. Percentage of trained journalists (blue) and broadcast topics (red) by gender

Media Types and Number of AMR and RMU Broadcasts

The type of media outlet and the number of AMR and RMU broadcasts by each were analyzed (figure 3). The majority of the broadcasts (83.5%) were on the radio, 8.7% were in print, and 7.8% were on television. Some of the television and radio broadcasts were live. The live broadcasts were more active and participatory, and they attracted many viewers.[23]

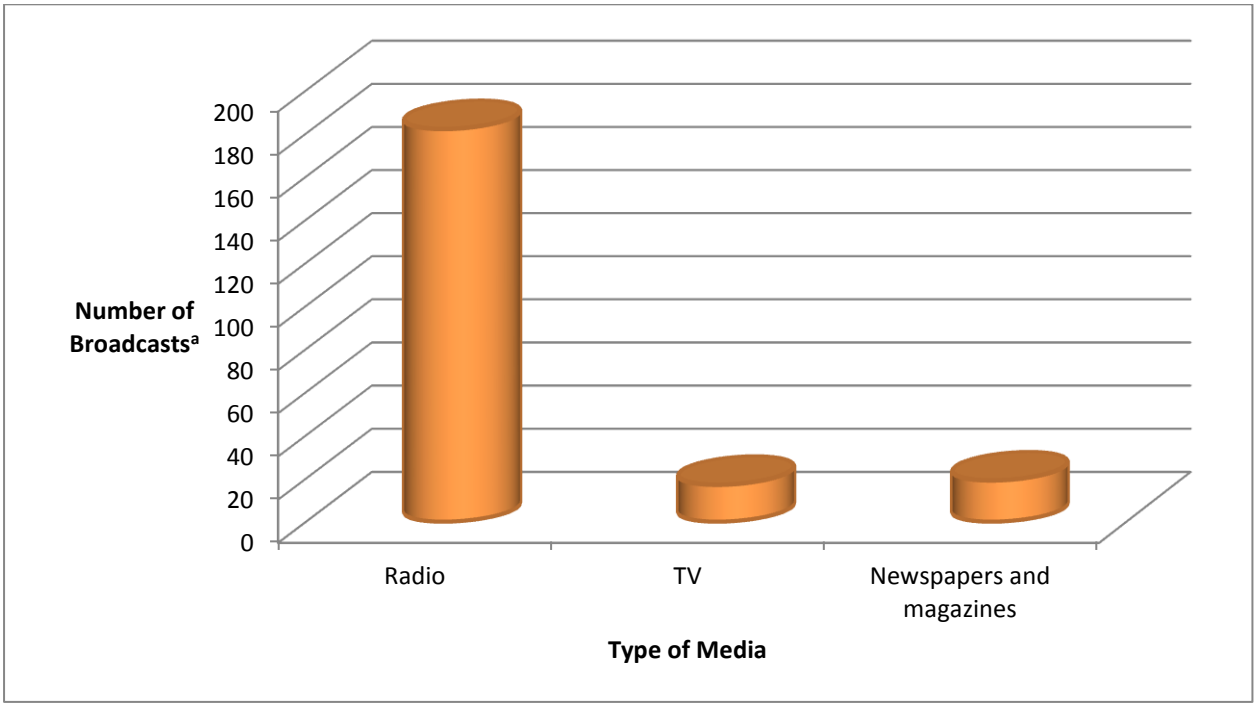

Figure 3. Broadcasts on medicine use by type of medium

[a]The AMR and RMU broadcasts reflect only those that were accessed or provided by reporters. However, the number of articles is likely greater than is shown.

Languages of Broadcasts

What languages the media used to educate the public was another area looked at for the RMU and AMR broadcasts. They used a total of 10 languages (figure 4). The languages used frequently were Amharic (65.1%); Oromigna (18.8%); Tigrigna (6.9%); Agewgna (5.0%); Somaligna (1.4%); and Wolaytigna, Dawrogna, Kembatigna, Kontigna, and Tibarigna (0.5% each). The number of languages indicates the wide coverage of the broadcasts.

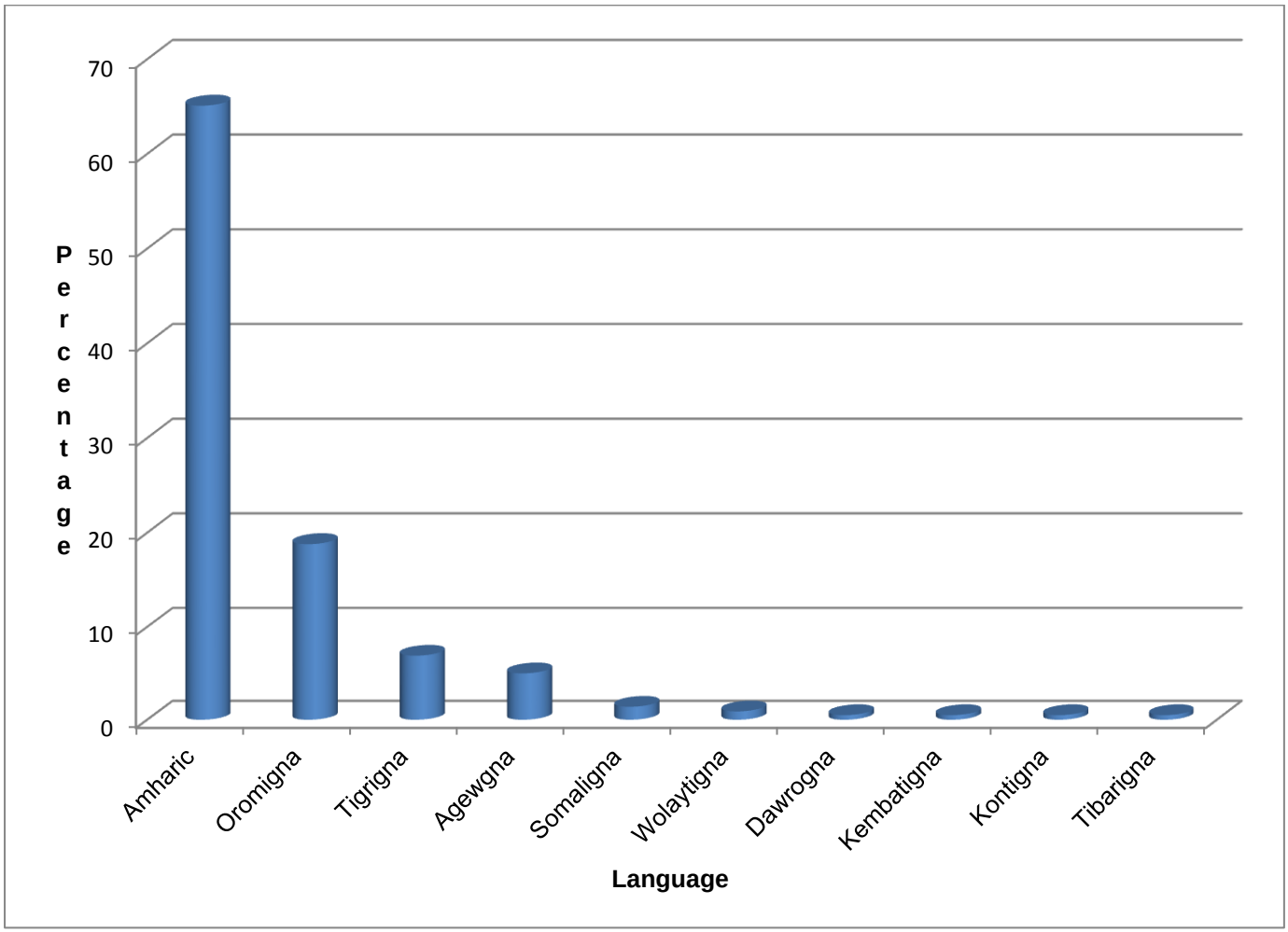

Figure 4. Media broadcasts by language

Note: The numbers of medicine use topics and languages broadcast in a series of programs may be considered as one depending on the content or topic covered.

Topics of Medicine Use Broadcasts

Another important area that the analyses looked into was the specific medicine-use topics addressed. Because the specific topics varied, they were organized into 20 main categories. The analysis indicates that the media covered a vast area of medicine uses educate not only the public but also health care providers, health program managers, and policy makers. Among the specific topics are antimicrobials use, resistance prevention, and containment (26.1% of topics); RMU (17.9%); TB and medicine use (10.1%); antiretroviral medicine use and adherence (9.6%); malaria and medicine use (4.6%); and self-medication and sharing,

providers' communication with their clients, infection prevention, individual and environmental hygiene, and counterfeit medicines (figure 5).

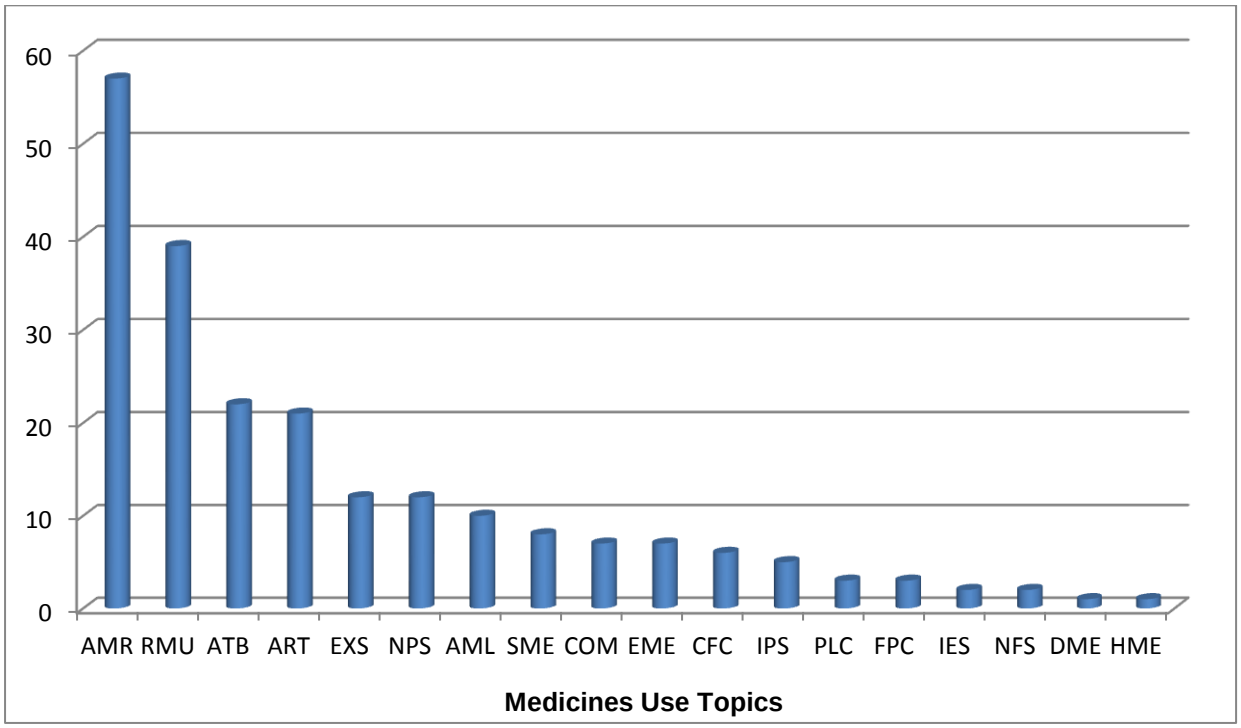

Figure 5. Number of medicine use broadcasts by topic

Note: Abbreviations are defined in the acronyms and abbreviations list at the beginning of this document. The list of medicine use topics of media broadcasts reflects only those the author was able to access or provided by reporters. However, the topics of articles are expected to be more than are shown.

Location of the Medicine-Use Broadcasts

The geographic locations of the medicine use broadcasts are shown in figure 6. Most of the RMU and AMR broadcasts were from Addis Ababa (23.4%), followed by Hawassa (14.2%), Adama (11.0%), Waghimra (7.8%), Bahir Dar (7.3%), Dessie (6.9%), Meklle (6.4%), Gondar (5.5%), Debre Markos (3.7%), Dire Dawa (3.2%), Kombolcha (2.8%), and Assela (1.4%). The catchment area for some of the broadcasters was limited to a certain radius from the center of the transmission. Some of the radio broadcasts were made by education media centers that target teachers and students which could also reach other nearby populations.

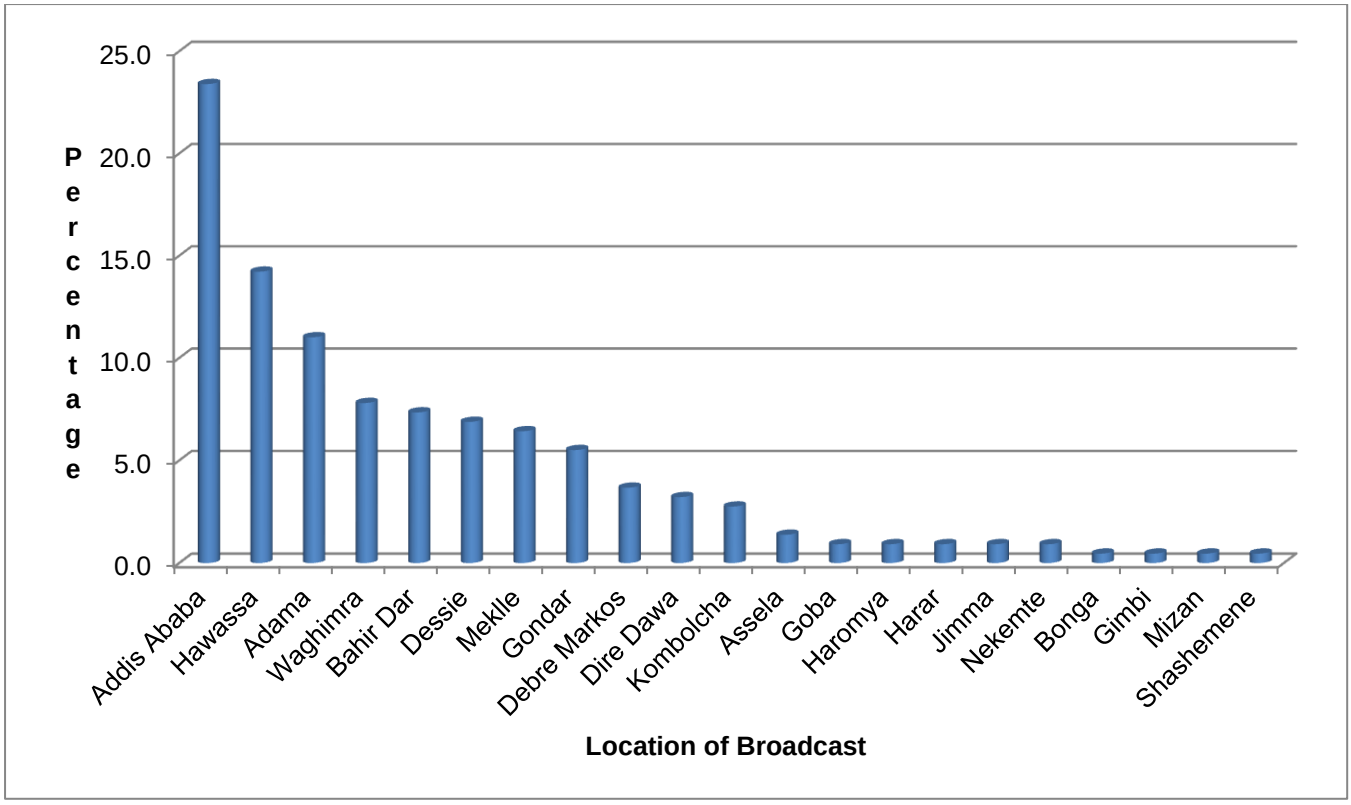

Figure 6. Medicine use media broadcasts by location

DISCUSSION

Mass media education using posters, radio, television, newspapers, magazines, persuasive print materials, and news materials and one-to-one interactive visits at the community level are integrally important to promote RMU. It has been indicated that clients who were provided information knew more about their medicines and how to use them and retained that knowledge.[9]

The survey and study had already identified gaps in the community regarding RMU in general and antimicrobials in particular. Therefore, the intervention strategy to build the capacity of journalists was intended to address those gaps by reaching a wider audience at a relatively cheaper per capita cost. It is true that that better knowledge led to improved use of medicines. However, the author is cognizant that increasing clients' knowledge is only halfway to the goal. Obtaining evidence showing that the knowledge gained enhanced adherence to treatment, reduced expenditure, and improved health outcomes is also necessary.

The mass media included in this analysis were radio, television, and newspapers. Radio is the most frequently used medium in Ethiopia. Another study also showed that radio was the most widely used medium in developing countries, whereas newspapers were used most widely in developed countries.[9]

Ethiopia is a large, diversified country with multiple mass media outlets.[20] The capacity-building intervention has been able to address 9.3% of all journalists working in radio, television, and newspapers. Although the coverage appears wide, it is actually much narrower because of the number of languages and broadcasters. The broadcasts on the promotion of RMU and the prevention and containment of AMR were transmitted in 10 languages spoken in Ethiopia.

Client or public socio-demographic and socioeconomic factors may affect the reception and understanding of the information broadcast by the mass media. Those factors may include background knowledge and perception, age, gender, and education, among others. Patients who received a refill prescription, who had a chronic disease, and who had self-medicated previously reported more accurate information.[9]

A 2001 study in Ethiopia reported that teaching mothers to provide home treatment for malaria resulted in a major reduction in the mortality of children under the age of five in malaria-endemic areas.[24] Another study showed that educating mothers in the use of oral rehydration therapy for diarrheal diseases reduced admissions and mortality by 50%.[25] It was argued that although women are not recognized as health care workers, they are in fact responsible for delivering 70% to 80% of all health care in developing countries.[26]

Because women administer medicines to their children, they must have sufficient knowledge about the medicines to ensure that the medicines are used properly. The mother is the most important health worker for her children, and that role extends to the purchase and administration of medicines.[9] There is a saying in Ethiopia that if you teach a mother, you teach the whole family. Hence, the education and empowerment of women—mothers, wives, and grandmothers—in the better use of medicines could be an important step. The majority of

the broadcasts were through radio, which women who are at home caring for their families listen to.

This assessment has shown that of trained journalists and broadcast topics, 75.2% of the topics broadcast were reported by 84.0% of the males, whereas 15.7% of the females reported 24.8% of the broadcast topics. Thus, females did more broadcasts than males relative to their number.

A 2009 study in Ethiopia[27] indicated that media coverage of HIV and AIDS and TB issues was insufficient. The coverage was event driven rather than analytical. The reporting mainly contained human-interest stories that depended on government institutions as the primary information source. The stories also demonstrated journalists' lack of experience, knowledge, and resources to pursue such stories on those issues; and indicated that special health desks or health beats and journalists face institutional, professional, cultural, and leadership challenges in covering HIV and AIDS and TB.[27]

However, the intervention was shown to not only build the journalists' capacity but also to enable them to broadcast on their own in the electronic and print mass media. The journalists were able to cover specific topics to educate, advocate, and empower the public, health providers, and policy makers on RMU and the prevention and containment of AMR. The topics were (a) use of antimicrobials, (b) resistance prevention and containment, (c) general RMU, (d) TB and medicines used to treat it, (e) antiretroviral medicine use and adherence, (f) malaria and medicines used to treat it, (g) self-medication and sharing, (h) providers' communication with their clients, (i) infection prevention and individual and environmental hygiene, and (j) counterfeit medicines, among others.

This report has shown that the most frequently broadcast topics in education and the empowerment of the public made a positive change in improving knowledge. That result was supported by the reviews of radio, television, newspaper, and other mass media education efforts targeting consumers and prescribers on the promotion of RMU and in reducing antimicrobials use for coughs and colds.[9–13] However, the challenge may be that journalists often rely on health care providers to get information for their broadcasts. That challenge was considered an issue by another study.[14] Nevertheless, the approach of the intervention is to build journalists' capacity not only to find information from health experts but also to be able to find, investigate, and triangulate information on the use of medicines before broadcast.

FMHACA and USAID/SIAPS have used mass media education in the prevention and containment of AMR and promotion of RMU. The review that targeted the general public and prescribers showed that the increased knowledge about RMU has improved the abundant irrational use.[9,10]

In the intervention assessment of the topics broadcast, substance abuse of drugs, khat (*Catha edulis*), alcohol, and others—was the sixth most frequently broadcast topic. However, care should be taken to ensure that reporting communicates factual information about drugs, their effects, and the potential consequences of addiction. An unintended effect of misinformation may actually be increased experimentation.

Media education has been used to reduce tobacco and illicit drug use and to promote road safety. Media education has had moderately positive results in a number of areas, including the promotion of healthier nutrition, physical activity, and participation in screening for

breast and cervical cancer, and organ donation. It has also had positive effects on prehospital response times for potential heart attack symptoms.[18] Often the aim was to reduce use and raise awareness, which meant that people had to understand and retain the main messages. However, those efforts were rarely evaluated, and whether audiences liked the messages was undetermined.

A trend in the health sector has been to buy expensive airtime or space in print media and to prepare a script or article to transmit messages to the public on RMU. That approach, however, has lacked the full involvement and ownership of key stakeholders, and has proved unsustainable. But the approach described in this report ensures that all medicine use in general and the public health and economic threats of AMR in particular are considered priorities of the national health development agenda and need to be followed, regularly reported, and updated. The sustainability of this approach is evidenced in that all of the broadcasts were done by the media outlet itself and were maintained over time.

The geographic locations of the medicine-use broadcasters were many (figure 6). However, the catchment area for some of the broadcasters is limited to a certain radius from the center of the transmission. Some of the radio broadcasts were by education media centers that target teachers, but they cannot exclude other populations.

A sample analysis of the coverage or catchment population of medicine use broadcasts showed four broadcasts by ETV (Ethiopia Television) 1 (now EBC, the main channel), three of which were live transmissions by a regularly watched Saturday health program promoting RMU and the prevention and containment of AMR. The live ETV programs were recorded and repeated the following week for anyone who was unable to attend the live programs. This media outlet has wide coverage in Ethiopia: 25 million throughout the country.[20] An earlier study estimated that 85% of the interviewed population had watched one of the live programs.[23]

The male-to-female ratio in Ethiopia is 50:49.[28] If one assumes that of the 55% who watched the live programs were ages 15 years and older [28] viewed those broadcasts, assuming they had access to a television,[28] approximately 11.7 million people watched one of the live ETV programs, of whom nearly half were females.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The intervention takes a bottom-up approach—that is, education and empowerment of the public and clients in the prevention and containment of AMR and improved medicine use. It also enhances appropriate health-seeking behavior, infection prevention and patient safety, individual and environmental hygiene, and other behaviors, all of which are important in the prevention and containment of AMR and the promotion of RMU. As it is witnessed from the stories transmitted through different media, this approach will educate the public on the following: (1) what and what not to demand during health seeking and use of medicines; (2) what health and medicine-use history to give to health care providers; (3) what information on current health and disease status, prognosis, and treatment options should be requested from health care providers; and (4) if medicines are prescribed, what information about medication names, uses, dosages, and frequency and duration should be received from health care providers.

The media have done tremendous work to create awareness, education, and advocacy to the general public, health care providers, health program managers, and policy makers and regulators on the use of medicines in general and on specific topics such as AMR, TB, antiretrovirals, and, in particular, the use of medicines in treating malaria. The trends are positive—not only have the numbers of broadcasts and broadcasters increased, but also the specific topics broadcast, the languages used, and the number of media outlets have grown in number. Some of the broadcasts were live programs that were interactive, persuasive, and watched by large and varied audiences.

The capacity-building intervention has shown that with proper communication, the media now consider the prevention and containment of AMR and the promotion of RMU as priorities. The intervention can be accomplished without requesting additional budgeted funds or purchasing airtime or print space, and it can be integrated into the development agenda of the country. The country will receive a return on its investment over time.

Some of the broadcasts are transmitted through the local mass media and education media that target a specific segment of the society. Messages can be broadcast in many languages and tailored for the specific population groups targeted, such as women, teachers, and students, because these are education centers for their localities.

Recommendations

There is a need to intensify and strengthen the intervention, not only by expanding the number and coverage of broadcasts but also by strengthening the sustainability and improving the quality of the message to be transmitted. It is also important to take into account the language and cultural beliefs of the targeted audience. The influence of socio-demographic factors on the targeted audience is also needs to be considered. The effects of those factors will be great and easier to evaluate.

Those efforts may necessitate a further increase in the number of broadcasts on different topics of medicine use, such as including education about the use of medicines in school

curricula and adult literacy programs. An increase in the number of live, interactive, and persuasive regular broadcasts may have better outcomes.

Although media education provides clients and the public with the information about the use of medicines and AMR, such efforts will only go halfway to the goal of improving quality of life and decreasing morbidity and mortality. Evidence is needed to prove that the knowledge gained enhances adherence to treatment, reduces expenditure, and improves health outcomes. That evidence, in turn, has to convince decision makers to invest in media education as the preferred alternative intervention strategy.

Broadcast and print media have different gatekeeping priorities, and data and other information are filtered and edited before reaching their audiences. It is important that more than one person review the messages, but it is also important that all those involved in the process agree to and accept the information to be broadcast and integrated into their program. Such quality assurance on the content of the messages to be broadcast must continue to gain the intended changes in behavior.

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